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======= WPI =======

TI - Elastic playing surface - comprises base coated with coarse granular rubber layer, fine granular rubber sealing layer, then synthetic resin surface layer

AB - J54048927 An economical elastic surface exhibiting excellent elasticity and durability, esp. suitable for use in the ground, the field, a tennis court and a basket ball court, etc. is made by applying a coarse granular rubber layer having cavities in the inner part, comprising a coarse granular rubber having minimum granular size of >=1mm., e.g. pulverised waste tyre, natural rubber, styrene-butadiene rubber, polybutadiene rubber, polyisoprene rubber, polyurethane rubber, etc. and a synthetic resin binder e.g. polyurethane, acrylic ester copolymer, SBR, EVA copolymer, polyamide, polyester and polyepoxide, etc. on a base, e.g. made of concrete, mortar, asphalt concrete, wood plate and synthetic resin, etc.

- This is followed by applying a fine granular rubber layer having the max. granular size <1mm. e.g. made of the same material as that of the coarse granular rubber to seal the coarse granular rubber layer and subsequently applying a synthetic resin facing layer, e.g. made of polyurethane, acrylic ester copolymer, styrene-butadiene rubber, EVA copolymer, polyamide, polyester or polyepoxide etc.

PN - JP54048927 A 19790417 DW197922 000pp
- JP56024043B B 19810603 DW198126 000pp

PR - JP19770115101 19770927

PA - (MITK) MITSUI TOATSU CHEM INC

MC - A11-B05 A12-F01 A12-R L02-D09

DC - A18 A25 A93 L02 Q41

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L1: Entry 1 of 1 File: DWPI Apr 17, 1979

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TITLE: Elastic playing surface - comprises base coated with coarse granular rubber layer, fine granular rubber sealing layer, then synthetic resin surface layer

PATENT-ASSIGNEE:

ASSIGNEE	CODE
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BASIC-ABSTRACT:

An economical elastic surface exhibiting excellent elasticity and durability, esp. suitable for use in the ground, the field, a tennis court and a basket ball court, etc. is made by applying a coarse granular rubber layer having cavities in the innerpart, comprising a coarse granular rubber having minimum granular size of >=1mm., e.g. pulverised waste tyre, natural rubber, styrene-butadiene rubber, polybutadiene rubber, polyisoprene rubber, polyurethane rubber, etc. and a synthetic resin binder e.g. polyurethane, acrylic ester copolymer, SBR, EVA copolymer, polyamide, polyester and polyepoxide, etc. on a base, e.g. made of concrete, mortar, asphalt concrete, wood plate and synthetic resin, etc.

This is followed by applying a fine granular rubber layer having the max. granular size <1mm. e.g. made of the same material as that of the coarse granular rubber to seal the coarse granular rubber layer and subsequently applying a synthetic resin facing layer, e.g. made of polyurethane, acrylic ester copolymer, styrene-butadiene rubber, EVA copolymer, polyamide, polyester or polyepoxide etc.

TITLE-TERMS: ELASTIC PLAY SURFACE COMPRISE BASE COATING COARSE GRANULE RUBBER LAYER FINE GRANULE RUBBER SEAL LAYER SYNTHETIC RESIN SURFACE LAYER

DERWENT-CLASS: A18 A25 A93 L02 Q41

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⑭弾性路面の舗装方法

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⑫発　明　者　小林憲司
横浜市戸塚区矢部町1541番地
同　武居進
鎌倉市大船3—15—3
⑫発　明　者　石橋芳晴
鎌倉市岩瀬1—1—12
⑪出　願　人　三井東圧化学株式会社
東京都千代田区霞が関三丁目2番5号
⑭代　理　人　弁理士　若林忠

明　　細　　書

1. 発明の名称

弾性路面の舗装方法

2. 特許請求の範囲

1) 基盤の上に最小粒径1㎜以上の粗粒ゴムと合成樹脂バインダーとから成る空隙を内部に形成した粗粒ゴム層を施工し、次いで最大粒径1㎜未満の細粒ゴム層を施工して前記粗粒ゴム層の目止めを行い、次いで合成樹脂表層を施工することを特徴とする弾性路面の舗装方法。

2) 特許請求の範囲第1)項記載の弾性路面の舗装方法において、合成樹脂がポリウレタンである弾性路面の舗装方法。

3) 特許請求の範囲第1)項又は第2)項記載の弾性路面の舗装方法において、古タイヤを粉砕して粒ゴムを得る弾性路面の舗装方法。

3. 発明の詳細な説明

本発明は弾性路面の舗装方法に関し、詳しくは各種の運動場や歩道、特に陸上競技場やテニスコート、バスケットボールコート等に適した高弾性で、耐久性にすぐれ、かつ経済的な路面の舗装方法に関するものである。

従来、コンクリート、アスファルトコンクリート等の基盤の上に各種の合成樹脂で舗装した路面が、特に陸上競技場、テニスコート、ゴルフ場、体育館床等の運動施設に使用されている。これらの合成樹脂による舗装路面は一般に弾性を有し、運動性能にすぐれるが、高価なのが欠点である。最近タイヤ屑などの粒状ゴムを利用した省資源タイプの廉価な弾性舗装路面が実用化されており、注目を集めているが、施工技術や耐久性等に多くの問題点が残されている。

本発明者等は高弾性で耐久性に富み、かつ施工の容易な舗装路面を経済的に得るための方法について種々検討した結果、タイヤ屑等の粗粒ゴムを合成樹脂バインダーで結合して空隙を内部に形成した弾性体層の表面に細粒ゴムと合成樹脂バインダーとの混合物を施工して該弾性体層の目止めを行つたのち、合成樹脂表層を施工することにより粗粒ゴム自体の弾性が高度に生かされ、その結果

として従来の合成樹脂単独の舗装路面と同等以上の弾性を有し、しかも、高価な合成樹脂表層材を無駄なく用いて、経済的な弾性舗装路面が得られることを発見して、本発明を完成するに至つた。

一般にタイヤ屑等の粒状ゴムは、それ自体高弾性を有するので、舗装材としてその弾性を生かす為には粒径の大きな、いわゆる粗粒ゴムを用いる必要がある。しかも、粗粒ゴムを結合する合成樹脂バインダーの使用量をできるだけ小さくし、ゴム粒子間に空隙を持たせて多孔質とすることにより、より高弾性が得られる。一方、高価な合成樹脂バインダーの量を小さくすることは経済性の点からも必要なことである。しかしながら、このようにして得られる空隙を内部に形成した粗粒ゴム層の上に合成樹脂表層を施工する際、表層の合成樹脂材料が粗粒ゴム層の空隙部を通過して、下に洩れてしまう欠点がある。本発明者等はこの欠点を解決する為に粗粒ゴム層の表面に粒径の小さいいわゆる細粒ゴムと合成樹脂バインダーとの混合物から成る細粒ゴム層を施工して、粗粒ゴム層の

空隙部の目止めを行い、その上に合成樹脂表層を施工することにより、表層材が下へ洩れるのを防止して空隙を確保し、経済的に高弾性の舗装路面を得ることに成功したものである。

以下図面に基いて本発明の構成を説明する。

まず、基盤1の上に必要に応じてプライマー等を塗布し、粗粒ゴムに合成樹脂バインダーを混合した材料をレーキ、ローラー、コテ、アスファルトフィニッシャー等を用いて敷きならす（粗粒ゴム層2）。次いで細粒ゴムに合成樹脂バインダーを混合した材料を薄く敷いて前記粗粒ゴム層の目止めを行う（細粒ゴム層3）。最後に公知の方法に従つて合成樹脂表層4を施工する。

基盤1としてはコンクリート、モルタル、アスファルトコンクリート、木板、合成樹脂等公知の硬質または軟質基盤が用いられる。粗粒ゴムとしては最小粒径1㎜以上の粒状ゴムが、また、細粒ゴムとしては最大粒径1㎜未満の粒状ゴムがそれぞれ用いられる。粗粒ゴムとしては最小粒径1㎜以上、好ましくは粒径2ないし6㎜のできるだけ

粒径の揃つたものが適当であり、細粒ゴムとしては最大粒径1㎜未満の細かいものが適当である。

粗粒ゴムおよび細粒ゴムとしては天然ゴム、スチレン・ブタジエンゴム、アクリロニトリル・ブタジエンゴム、ポリブタジエンゴム、ポリイソプレンゴム、ポリクロロプレンゴム、ブチルゴム、エチレン・プロピレンゴム、ポリウレタンゴム等およびそれらの加硫ゴムのチップがあるが、特に廃タイヤを粉砕して得られるタイヤ屑が廃品利用と経済性の点から最も好適に使用される。

タイヤ屑としては、破砕片状のものが一般的であるが、他にも種々の形状のものがあり、またタイヤ中の繊維屑を含有したまゝのものもあるが、いづれも使用できる。

また、粒状ゴムと合成樹脂バインダーとの接着性を上げる目的で、粒状ゴムの表面を環化法、塩酸化法、イソシアナート処理法等で改質したものももちろん使用できる。

バインダーおよび表層に用いられる合成樹脂としてはポリウレタン、アクリル酸エステル共重合

体、スチレン・ブタジエンゴム、エチレン・酢酸ビニル共重合体、ポリアミド、ポリエステル、ポリエポキサイド等公知の合成樹脂材料が単独で、あるいは2種以上組合わせて使用される。これらの合成樹脂材料には1液型と2液型、溶剤型とエマルジョン型、熱可塑型と熱硬化型等の各種のタイプがある。バインダーおよび表層に用いられる合成樹脂の種類は同一であつても異つていてもよい。弾性の点からポリウレタンは最も好適に用いられる材料であるが、通常の1～2液型システムのほか、溶液型熱可塑性ウレタンシステム、ウレタンエマルジョンシステム等が用いられる。

既に記載した通り、粗粒ゴム層の弾性構造は、粗粒ゴム間に空隙を持たせて多孔質とすることにより相乗的に発揮されるものである。この点から粗粒ゴムの粒径は1㎜以上、好ましくは2㎜以上であることが必要であり、一方細粒ゴムの粒径は目止め効果を出す為に最大1㎜未満であることが必要である。

粒状ゴムと合成樹脂バインダーとの混合比は、

粗粒ゴム層については空隙部を持たせる為にバインダーの比率を小さくする方が良く、通常粗粒ゴム対バインダーとして重量比で1対4ないし10対1程度が適当である。また、細粒ゴム層については、目止めの効果を十分出す為に、バインダーの比率をある程度高める必要があり、細粒ゴム対バインダーとして重量比で1対10ないし4対1程度が好ましい。

本発明における粗粒ゴム層2、細粒ゴム層3および合成樹脂層4はそれぞれ目的に応じた厚みとすることができ、例えば陸上競技場の場合はそれぞれ9㎜、1㎜および3㎜、テニスコートの場合はそれぞれ3㎜、1㎜および1㎜のように自由に選択できる。合成樹脂表層4の厚みは用途によつて異るが、テニスコート、遊歩道等の場合は1～2㎜で十分であり、その表面は用途に応じた仕上とすることができる。

本発明の方法で得られる弾性舗装路面は従来の合成樹脂単味の舗装路面と同等以上の弾性と運動性能を有し、しかも経済的なので、本発明の効果

は極めて顕著である。

以下本発明の方法を実施例により説明する。実施例中の部は重量部を表わす。

実施例1

ポリウレタン弾性舗装用原液システムのA成分として平均分子量2000のポリオキシプロピレングリコールと過剰のトリレンジイソシアナート（2,4－体／2,6－体＝80／20）とを常法により反応させて、末端イソシアナト基含有率5.2％のプレポリマーを製造した。

また、B成分としてメチレンビス（o－クロルアニリン）を含む液状ポリアミン32部、トーナー30部、液状添加剤33部、鉛触媒4部および耐候安定剤1部から成るものを調合した。

〔粗粒ゴム層2の施工〕

上記A成分50部、B成分50部を予め撹拌混合したのち、これに古タイヤを粉砕して得られた平均粒径5㎜（最小粒径2㎜以上）の粗粒ゴム200部を加えて更に混合し、アスファルトコンクリート基盤の上に1㎡あたり3㎏流し、金ゴテ

でならしたのちローラーで軽く転圧し、約5時間放置して硬化乾燥させた。厚さ約4㎜の内部に空隙を形成した弾性層が得られた。

〔細粒ゴム層3の施工〕

上記A成分50部、B成分50部を予め撹拌混合したのち、これに古タイヤを粉砕して得られた最大粒径1㎜未満の細粒ゴム25部を加えてさらに混合し、粗粒ゴム層2の上に1㎡当り2㎏の割合で流し、ローラーでならして目止めを行なつた。約5時間放置して硬化乾燥させた。

〔表層4の施工〕

上記A、B両成分を重量比1対1で撹拌混合し細粒ゴム層3の上に流し、金ゴテでならして厚さ2㎜に舗装施工した。約10時間経過後、上記A成分50部、B成分50部、エロジール#2008部、クレー10部およびメチルエチルケトン100部を撹拌混合した艶消トップコート材料をBinks社製1液型エアレススプレー機械で1㎡当り約400g塗装した硬化時間は約1時間で、艶消弾性舗装路面が得られた。

この舗装路面の反発弾性をJIS K－6301に従つて測定した結果は53％で、比較例1の舗装路面に劣らない高弾性を示し、テニスコートや運動場等に適した性能を有していた。

比較例1

アスファルトコンクリート基盤の上に実施例1のA、B両成分から成るポリウレタン材料を厚さ7㎜に施工したのち、実施例1と同じ艶消トップコート材料を塗装して得られた弾性舗装路面のJIS K－6301による反発弾性は50％であつた。

実施例2

〔粗粒ゴム層2の施工〕

不揮発分48％のカルボキシ変性スチレン・ブタジエンゴムラテツクス100部に古タイヤを粉砕して得られた平均粒径5㎜（最小粒径2㎜以上）の粗粒ゴム150部を加えて撹拌混合し、予め上記ラテツクスを塗布したコンクリート基盤の上に1㎡当り4㎏ずつ流し、金ゴテでならしたのちローラーで軽く転圧し、約2時間放置して硬化乾燥

させ、厚さ約4㎜の内部に空隙を形成した多孔質の弾性層が得られた。

〔細粒ゴム層3の施工〕

上記ラテツクス100部に古タイヤを粉砕して得られた最大粒径1㎜未満の細粒ゴム20部を加えて撹拌混合し、粗粒ゴム層の上に1㎡当り1.5㎏の割合で流し、金ゴテでならして目止めを行なつた。約1時間放置して硬化乾燥させた。

〔細粒ゴム層3の施工〕

上記ラテツクス100部に古タイヤを粉砕して得られた最大粒径1㎜未満の細粒ゴム20部を加えて撹拌混合し、粗粒ゴム層の上に1㎡当り1.5㎏の割合で流し、金ゴテでならして目止めを行なつた。約1時間放置して硬化乾燥させた。

〔表層4の施工〕

不揮発分45％のアクリル酸ブチルを主成分とするアクリルエマルジョン100部、酸化クロム粉末10部、ブチルセロソルブ10部、エロジール#200　4部および水10部を撹拌混合し、細粒ゴム層の上にローラー刷毛で1㎡当り500

として、トリメチロールプロパンと大過剰のトリレンジイソシアナート（2.4－体／2.6－体＝80／20）とを常法により反応させて得た末端イソシアナト基含有率29.6％の部分プレポリマーを、B成分として平均分子量2.000のポリオキシプロピレングリコール、充填剤、鉛触媒顔料および安定剤から調合した成分をそれぞれ用い、ギヤー式連続施工機械を用いて両成分をイソシアナト基の活性水素に対する比が1.10になる割合で混合し、実施例1の細粒ゴム層の上に1㎡当り5㎏の割合で流した。30分経過後に粒径5㎜のポリウレタンチツプを散布し、そのまま放置、硬化させた。得られた舗装路面は厚さ11～13㎜の特に陸上競技場に適した凹凸面で、上記ポリウレタン単味で、厚さ11～13㎜に施工して得られた舗装路面とほぼ同等の弾性を有していた。

4.図面の簡単な説明

図面は本発明の方法で得られた弾性舗装路面の断面図である。

1.　基盤

9塗布し、1時間放置したのち再度1㎡当り500g塗布し、1時間放置して緑色の艶消舗装路面を得た。

この舗装路面のJIS K－6301による反発弾性は34％で、比較例2の舗装路面に比べてより高い弾性を示し、テニスコートや運動場等に適した性能を有していた。

比較例2

実施例2で用いたラテツクス100部と粒径1㎜未満の細粒ゴム50部とを撹拌混合し、予め上記ラテツクスを塗布したコンクリート基盤の上に1㎡当り2㎏流し、金ゴテでならして施工した。約2時間放置して乾燥したのち、再び1㎡当り2㎏流す作業を更に2回くり返し厚さ約4㎜の平坦な舗装面を得た。この舗装面の上に実施例2と全く同様に表層を施工して得られた艶消舗装路面のJIS K－6301による反発弾性は15％であつた。

実施例3

ポリウレタン弾性舗装用原液システムのA成分

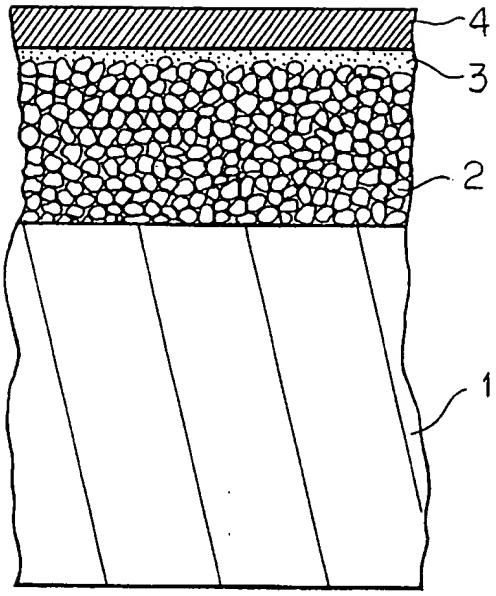
2.　粗粒ゴム層

3.　細粒ゴム層

4.　合成樹脂表層

特許出願人　三井東圧化学株式会社

代理人　若林　忠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METHOD OF PAVING ELASTIC ROAD SURFACE

(Dansei Romen no Hoso Hoho)

Kenji Kobayashi and Yoshiharu Ishibashi

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SPECIFICATION

I. Title of the Invention

Method Of Paving Elastic Road Surface

II. Claims

1. A method of paving an elastic road surface which is characterized by that

a coarse grained rubber layer formed with pore voids composed of a coarse grained rubber with the minimum grain size of 1 mm or above and a synthetic resin binder is constructed on a foundation, then a fine grained rubber layer with the maximum grain size of under 1 mm is constructed to fill the said coarse grained rubber layer and subsequently a synthetic resin surface layer is constructed.

2. A method of paving an elastic road surface wherein the synthetic resin is polyurethane in the method of paving an elastic road surface described in Claim 1.

3. A method of paving an elastic road surface wherein used tires are crushed to obtain the grained rubbers in the method of paving an elastic road surface described in Claim 1 or 2.

[1]Numbers in the margin indicate pagination in the foreign text.

III. Detailed Description of the Invention

This invention relates to a method of paving an elastic road surface and, in more detail, to a method of paving a highly elastic, superior in durability and economic elastic road surface which is suited to ground athletic field, tennis court, basketball court, etc.

Road surfaces paved with various synthetic resins on such foundations as concrete, asphalt concrete, etc. have been used in sport facilities such as ground athletic field, tennis court, golf course, floor of gymnasium, etc. The road surfaces paved with these synthetic resins are generally elastic and excellent in sport performance but has a drawback of high cost. More recently, a resource-saving type cheap elastic road surface utilizing grained rubbers such as tire chips, etc. has been put to practical use and attracted attentions, but many problems with construction technique and durability have remained.

The inventors made various studies on a method for economically obtaining a paved road surface which is highly elastic, rich in durability and easy to be constructed, as a result, they discovered that the elasticity of a coarse grained rubber itself was highly generated by constructing a mixture of

a fine grained rubber and a synthetic resin binder on the surface of an elastic layer given by combining a coarse grained rubber such as tire chips, etc. with a synthetic resin binder to form pore voids therein to fill the said elastomer layer and then constructing a synthetic resin surface layer, consequently, an economic elastic paved road surface which had an elasticity equal or higher than that of conventional paved road surface with synthetic resin alone and did not waste an expensive synthetic resin surface layer was obtained, thus they came to complete this invention.

Grained rubbers such as tire chips generally are highly elastic themselves, therefore so-called coarse grained rubbers with a large grain size must be used to produce their elasticity as pavement material. Moreover, an even higher elasticity is obtained by decreasing the amount of said synthetic resin binder for binding the coarse grained rubber as far as possible and having pore voids between the rubber grains to make the layer porous. On the other hand, a decrease of amount of said expensive binder is also necessary from economy. However, when the synthetic resin surface layer is constructed on the coarse grained rubber layer formed with pore voids therein thus obtained, there is such a drawback that the synthetic resin material of surface layer passes through the pore voids of said

coarse grained rubber layer and leaks down. To solve these drawbacks, the inventors succeeded in preventing the surface layer material from the downward leakage to secure the pore voids and obtaining a highly elastic paved road surface economically by constructing a fine grained rubber layer consisting of a mixture of a so-called fine grained rubber with small grain size and a synthetic resin binder on the surface of a coarse grained rubber layer and then constructing a synthetic resin surface layer thereon to fill the pore voids of said coarse grained rubber layer.

The constitution of this invention will be illustrated based on a drawing below.

First, a primer, etc. are applied onto a foundation **1** according to demand, and then a material mixed with a synthetic resin binder is paved on a coarse grained rubber with a rake, roller, trowel, asphalt finisher, etc. (a coarse grained rubber layer **2**). Subsequently, a material given by mixing a synthetic resin binder with a fine grained rubber is thinly paved to fill the said coarse grained rubber layer **2** (a fine grained rubber layer **3**). Finally, a synthetic resin surface layer **4** is constructed according to a well-known method.

A well-known hard or soft foundation such as concrete, mortar, asphalt concrete, wood plank, synthetic resin, etc. is

used as the foundation **1**. A grained rubber with the minimum grain size of 1 mm or above is used as the coarse grained rubber, and a grained rubber with the maximum grain size of under 1 mm is used as the fine grained rubber. A grained rubber with the minimum grain size of 1 mm or above, preferably a grained rubber with the grain size made even to 2-6 mm is suitable as the coarse grained rubber, and a fine grained rubber with the maximum grain size of under 1 mm is suitable as the fine grained rubber.

As the coarse grained rubber and the fine grained rubber, chips of natural rubber, styrene-butadiene rubber, acrylonitrile-butadiene rubber, polybutadiene rubber, polyisoprene rubber, polychloroprene rubber, butyl rubber, ethylene-propylene rubber, polyurethane rubber, etc. as well as their vulcanized rubber are given, particularly, tire chips obtained by crushing waste tires are used most suitably from the viewpoint of economy.

Broken sheet-like chips are generally used as tire chips, but other various shapes and tire chips containing fiber flocks intact are also given, and all of them can be used.

Of course, the surface of said grained rubbers modified by cyclization method, hydrochlorination method, isocyanate treating method, etc. can be use with the purpose of raising the adhesion

between the grained rubbers and the synthetic resin surface binder.

As synthetic resins used in the binder and surface layer, well-known synthetic resin materials such as polyurethane, acrylic ester copolymers, styrene-butadiene rubber, ethylene-vinyl acetate copolymer, polyamide, polyester, polyepoxide, etc. are used separately or by combining two or more of them. Various types such as one-liquid type and two-liquid type, solution type and emulsion type, thermoplastic type and thermosetting type, etc. are given in these synthetic resin materials. The kind of synthetic resins used in the binder and the surface layer may be same or different. Polyurethane is the most suitably used material from the viewpoint of elasticity, in addition to common one-liquid type and two-liquid type systems, solution-type thermoplastic urethane system, urethane emulsion system, etc. are used.

As described already, the elastic structure of said coarse grained rubber layer is displayed synergistically by having pore voids in the coarse grained rubber to make it porous. From this point, the grain size of coarse grained rubber must be 1 mm or above, preferably 2 mm or above, while the grain size of fine grained rubber must be maximum under 1 mm to produce the filling effect.

As the mixing ratio of grained rubber to binder, the ratio of

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binder had better be decreased to keep the pore voids for said coarse grained rubber layer, and the weight ratio of coarse grained rubber to binder is suitably about 1:4 to 10:1. For the fine grained rubber, the ratio of binder had better be increased to some extent to fully produce the filling effect, and the weight ratio of fine grained rubber to binder is preferably about 1:10 to 4:1.

The thickness of coarse grained rubber layer **2**, fine grained rubber layer **3** and synthetic resin surface layer **4** can be selected for each purpose, respectively, for example, they can be freely selected to be 9 mm, 1 mm and 3 mm in case of ground athletic field and 3 mm, 1 mm and 1 mm in case of tennis court. The thickness of synthetic resin surface layer **4** depends upon purposes, 1-2 mm is sufficient in case of tennis court, public walk, etc., and its surface can be finished according to demand.

The elastic paved road surface obtained by the method of this invention has elasticity and sport performance equal to or above the paved road surface with a synthetic resin only and is also economic, therefore the effects of this invention are extremely remarkable.

The method of this invention will be illustrated by actual examples. "Pt" in the actual examples indicates "part by weight".

Actual Example 1

A polyoxypropylene glycol with average molecular weight 2000 and an excess of tolylene diisocyanate (2,4-mer/2,6-mer = 80/20) were reacted by ordinary method to prepare a prepolymer with isocyanate end group content of 5.2% as component A of a stock solution for polyurethane elastic pavement.

A liquid composed of 32 pt of a liquid polyamine containing methylenebis(o-chloroaniline), 30 pt of a toner, 33 pt of a liquid additive, 4 pt of a lead catalyst and 1 pt of a weather-resistant stabilizer were blended as component B.

[Construction of coarse grained rubber layer **2**]

50 pt of above component A and 50 pt of above component B were agitated and mixed beforehand, then 200 pt of a coarse grained rubber with average mean grain size of 5 mm (minimum grain size 2 mm or above) obtained by crushing used tire was added thereto and further mixed, 3 kg/m^2 of this mixture was allowed to flow onto an asphalt concrete foundation, leveled with a metal trowel, then roll compacted lightly with a roller, placed for about 5 hr, hardened and dried. A ca. 4 mm-thick elastic layer formed with pore voids therein was obtained.

[Construction of fine grained rubber layer **3**]

50 pt of above component A and 50 pt of component B were agitated and mixed beforehand, then 25 pt of a fine grained rubber with maximum grain size of under 1 mm obtained by crushing used tire was added thereto and further mixed, this mixture was allowed to flow onto the coarse grained rubber layer **2** at a ratio of 2 kg/m^2, and then leveled with a roller to fill the layer. It was placed for about 5 hr, hardened and dried.

[Construction of surface layer **4**]

The above two components A, B were agitated and mixed at a weight ratio of 1:1, the mixture was allowed to flow onto the fine grained rubber layer **3**, leveled with a metal trowel and paved to a thickness of 2 mm. After a lapse of about 10 hr, 50 pt of above component A, 50 pt of above component B, 8 pt of #200 aerosil, 10 pt of clay and 100 pt of methyl ethyl ketone were agitated and mixed, and ca. 400 g/m^2 of the resultant mat top coat material was coated by a one-liquid type airless spray machine made by Binks Co. It was hardened in about 1 hr to give a mat elastic paved road surface.

The resilience of this paved road surface was measured according to JIS K-6301, consequently it was 53%, exhibited a high elasticity not inferior to a paved road surface of

Comparison Example 1 and had performance suited to tennis court and athletic field, etc.

Comparison Example 1

The polyurethane material comprising two components A, B of Actual Example 1 was constructed to a thickness of 7 mm on an asphalt concrete foundation, then coated with a mat top coat material same as Actual Example 1, and the resilience of resultant elastic paved road surface according to JIS K-630 was 50%.

Actual Example 2

100 pt of the coarse grained rubber with average mean grain size of 5 mm (minimum grain size of 2 mm or above) obtained by crushing used tire was added to 100 pt of a carboxyl-modified styrene-butadiene latex with 48% non-volatiles, agitated and mixed, 4 kg/m^2 of this mixture was allowed to flow onto a concrete foundation coated with the above latex beforehand, leveled with a metal trowel, then roll compacted lightly with a

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roller, placed for about 2 hr, hardened and dried. A ca. 4 mm-thick porous elastic layer formed with pore voids therein was obtained.

[Construction of fine grained rubber layer 3]

20 pt of the fine grained rubber with maximum grain size of under 1 mm obtained by crushing used tire was added to 100 pt of above latex, agitated and mixed, this mixture was allowed to flow onto the coarse grained rubber layer at a ratio of 1.5 kg/m^2, leveled with a metal trowel to fill the layer. It was placed for about 1 hr, hardened and dried.

[Construction of fine grained rubber layer **3**]

20 pt of the fine grained rubber with maximum grain size of under 1 mm obtained by crushing used tire was added to 100 pt of above latex, agitated and mixed, this mixture was allowed to flow onto the coarse grained rubber layer at a ratio of 1.5 kg/m^2, leveled with a metal trowel to fill the layer. It was placed for about 1 hr, hardened and dried.

[Construction of surface layer **4**]

100 pt of an acrylic emulsion based on butyl acrylate with 45% non-volatiles, 10 pt of chromium oxide powder, 10 pt of butyl cellosolve, 4 pt of 200# aerosil and 10 pt of water were agitated and mixed, 500 g/m^2 of the mixture on the fine grained rubber layer with a roller brush, placed for 1 hr and then 500 g/m^2 of the mixture was coated again, placed for 1 hr and a green mat paved road surface was obtained.

The resilience of this paved road surface according to JIS K-6301 was 34%, exhibited a high elasticity not inferior to a

paved road surface of Comparison Example 2 and had performance suited to tennis court and athletic field, etc.

Comparison Example 2

100 pt of the latex used in Actual Example 2 and 50 pt of a fine grained rubber with maximum grain size of under 1 mm were agitated and mixed, 2 kg/m^2 of this mixture was allowed to flow onto a concrete foundation coated with the above latex beforehand, leveled with a metal trowel and constructed. It was placed for about 2 hr and dried, then the operation of 2 kg/m^2 flow was repeated twice again. A surface layer was constructed on this paved surface in all the same way as Actual Example 2. The resilience of resultant mat paved road surface according to JIS K-6301 was 15%.

Actual Example 3

A partial prepolymer with isocyanate end group content of 29.6% obtained by reacting trimethylolpropane and a large excess of tolylene diisocyanate (2,4-mer/2,6-mer = 80/20) according to an ordinary method as component A and a polyoxypropylene glycol with average molecular weight of 2000 as component B in a stock solution system for polyurethane elastic pavement, and ingredients blended from a filler, a lead catalyst pigment and a stabilizer were used, respectively, the two components were mixed at a ratio of 1.10 to active hydrogens of isocyanate

groups, and then were allowed to flow on the fine grained rubber layer of Actual Example 1. After 30 min, polyurethane chips of 5 mm in grain size were spread, placed as they were and hardened. The resultant paved road surface was a 11-13 mm-thick rough surface particularly suited to ground athletic field and had an elasticity nearly equal to the paved road surface obtained by constructing the above polyurethane alone to a thickness of 11-13 mm.

IV. Brief Description of the Drawing

The drawing is sectional view of elastic paved road surface obtained by the method of this invention.

1 foundation

2 coarse grained rubber layer

3 fine grained rubber layer

4 synthetic resin surface layer

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